

## Faculty of Engineering

### Summer Research Program 2022-2023

Project Title: Developing Tools for Impedance-based Stability Analysis of Inverter-based Resources in PSCAD for Renewable Energy Resources Integration

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#### Objective

This project aims to develop a tool for conducting impedance based stability analysis tools in PSCAD for small signal stability analysis of inverter based resources such as wind and solar farms in the grid. The project will start with developing a tool in PSCAD to identify the impedance of a module by various identification methods. The identified impedance is then used to develop a tool, again in PSCAD, to conduct stability analysis.

#### Project Details

The project will aim to develop an impedance based stability tool for wind and solar farms in PSCAD. All of the steps for the analysis must be conducted within PSCAD. To better understand the details of the impedance-based stability analysis, please read: <https://ieeexplore.ieee.org/abstract/document/5741855>

#### Prerequisites

Signal processing, circuit and systems, power engineering

#### Additional Information

Familiarity with PSCAD is very helpful.